equitable apportionment of the water supply and flow of the Arkansas River and its tributaries as between the State of Colorado and the State of Kansas should be made; and as grounds therefor says:

(a) Any apportionment of the waters of an interstate stream requires the placing of a limitation or restriction on the upper state—in this case Complainant, State of Colorado, and hence amounts to an impairment of the quasi-sovereignty of that state to the extent of such restriction or limitation;

(b) No decree will be entered against a state (in this case Colorado) upon the suit of another state (in this case Kansas) unless there is a showing by clear and convincing evidence that the state which claims to be aggrieved (in this case Kansas) has suffered an injury of serious magnitude;

(c) There is no showing in this case that the State of Kansas has suffered, or is threatened with, an injury of serious magnitude, or any injury whatsoever;

(d) There is no showing that the State of Kansas has utilized, or now does utilize, fully the water supply of the Arkansas River which in the past has been, and now is, available to it and its water users.

II.

Under the decision of this Court in the original case of *Kansas v. Colorado*, 206 U. S. 46, no decree can be entered for the State of Kansas in this case unless it shall appear that through a material increase in the depletion of the waters of the Arkansas River by Colorado the substantial interests of Kansas are being injured to the extent of destroying the equitable apportionment of benefits from the water supply and flow of the Arkansas River and its tributaries between the State of Colorado and the State of Kansas. There is no finding, or evidence to support a finding, that the substantial interests of the State of Kansas have been so injured.

III.

Complainant excepts to Finding of Fact "Five", on page 9 of the Report, that since the taking of testimony in the former case of *Kansas v. Colorado*, 206 U. S. 46, there has been a material increase in the depletion by Colorado of the water supply of the Arkansas River, which has diminished the flow of water into the State of Kansas, to the injury of the substantial interests in Kansas, and says:

(a) The Master does not find, and the evidence will not sustain a finding, that there has been a material increase in the depletion by Colorado and its water users of the supply of the river. On the contrary the evidence shows that since 1907 the amount of divertible and usable water flowing across the Colorado-Kansas State line during the irrigation season (April-September) has been increased in average annual quantities. (By "divertible" is meant stream flows within the capacity of the existing Kansas ditches; by "usable" is meant divertible stream flows that reach the headgates of the Kansas ditches at times when they can be beneficially used for irrigation.)

(b) The Master finds no facts, and can find none from the record, to sustain a finding that there has been any injury to the substantial interests of Kansas, because the record shows that since 1907:

1. The irrigated acreage in Kansas has increased substantially;
2. The irrigated acreage in Kansas has increased proportionately to a far greater extent than the irrigated acreage in Colorado;
3. Diversions of water for irrigation in Kansas have greatly increased;
4. Agricultural production in Kansas has not suffered from any use of water of the Arkansas River in Colorado;

5. The use of water in Kansas for domestic or industrial purposes have not been adversely affected by any water uses made in Colorado;

6. There has been no loss in population or any adverse effect on the welfare of the State of Kansas or its citizens resulting from any use of the waters of the Arkansas River made in Colorado.

7. There has been a greater development and increase in prosperity of the Arkansas River basin in Kansas than in the Arkansas River basin in Colorado.

IV.

Complainant excepts to Finding of Fact numbered "Six" on page 10 of the Report that, "The average annual natural flow of the river and its tributaries is 1,240,000 acre-feet of which the average annual dependable and fairly continuous water supply and flow of the Arkansas River and its tributaries is 1,110,000 acre-feet" and says:

(a) The amounts stated are based upon estimates and are not, have not been, and cannot be, measured. The water supply of the Arkansas River is capable of measurement only when it is collected in a stream channel. The Master finds and recommends (pages 12, 16 and 21) that measuring points or stream gauging stations be established and maintained at Canon City and at the mouth of the Purgatoire River. Stream gauging stations have been maintained at both these points for many years. For the period 1908-1938 the annual flow at Canon City, adjusted for by-passed and imported water, was 573,964 acre-feet and for the same period the flow at the mouth of the Purgatoire was 96,416 acre-feet, or a total for both stations of 670,380 acre-feet.

(b) The phrase "average annual natural flow" is

meaningless without some definition of the word "natural";

(c) The phrase "average annual dependable and fairly continuous water supply" is meaningless without some definition of the word "dependable" and of the phrase "fairly continuous";

(d) All references to the amounts of the "average annual natural flow" and the "average annual dependable flow" are meaningless unless such amounts are capable of accurate measurement. The Master does not find, and from the record cannot find, any method whatever for the accurate measurement of such flows;

(e) The amounts found by the Master are incapable of accurate measurement and hence they do not, and cannot, constitute any basis for any workable apportionment of the waters of the stream between the two states;

(f) The Master's finding of "dependable and fairly continuous water supply and flow" is inconsistent with Findings of Fact "Second" and "Third" (pages 5 and 6 of the Report) to the effect that, "The character of the flow of the river in Colorado is variable from year to year and season to season and day to day," and, "The character of the flow of the river in Colorado is widely variable from year to year and season to season, and its general flow divides itself into three groups or kinds of flow, namely: First, the perennial flow from the high mountains consisting of melting snows in the mountains, varying almost from day to day Second, the intermittent flow, resulting from intense rainstorms on plains area, and, Third, a more or less constant flow varying slightly from year to year and from month to month due to return seepage from irrigated lands."

V.

Complainant excepts to Finding of Fact "Seven",

(page 10 of the Report) to the effect that the use of water in Colorado has "resulted in the diminution of the yearly average flow at the state line", for the reason that:

(a) There is no evidence to support such a finding;

(b) The evidence shows that since 1907 the amount of divertible and usable water flowing across the State line during the irrigation season has not been decreased.

VI.

Complainant excepts to the apportionment of water between the States of Colorado and Kansas as stated in Findings of Fact "Eight" and "Nine", Conclusions of Law "Two" and "Three", and Recommended Decree paragraphs "One" and "Two" (pages 10, 11, 14, 15, 19 and 20 of the Report), for the reasons that:

(a) The amount of water awarded to Kansas (185,000 acre-feet annually) is greatly in excess of the requirements of Kansas for land now under irrigation;

(b) The imposition of an obligation on Colorado to deliver to Kansas 185,000 acre-feet annually will inevitably result in there being withdrawn from irrigation in Colorado many thousands of acres of land. The Special Master finds (Finding "Six", page 10 of the Report) that "Both states have appropriated all of the natural flow of the Arkansas River and its tributaries" and further finds (Finding "Nine", page 11 of the Report) that there should be awarded and delivered to Kansas 185,000 acre-feet annually of "the average annual dependable water supply and flow of the river stream for * * * lands now being irrigated, and for lands to be irrigated, and lands irrigated from the waters of the Arkansas River prior to the time the State of Colorado increased her development in irrigation". Since the Master finds that the stream is over appropriated and awards Kansas water for lands not now irrigated, it is obvious that if Kansas is to irrigate additional lands there must necessarily fol-

low a decline in the Colorado irrigated acreage and the abandonment of irrigation systems now in existence including the abandonment of substantial portions of irrigation systems in existence in 1907. This result is contrary to the well-established principle that in the apportionment between states of the water of an interstate stream existing economic development must be protected whenever it is possible so to do.

(c) The Master's report does not limit, nor make any finding of, the amount of lands in Kansas "to be irrigated" or of the amount of "lands irrigated from the waters of the Arkansas River prior to the time the State of Colorado increased her development in irrigation". Without a specific or definite finding of the amount of these lands there can be no proper determination or definition of the amount of water necessary for irrigation in Kansas.

(d) The Master purports to consider, among other things, "proper requirements of transportation of the water and an economical use of water" (Finding "Six", page 40 of the Report) but makes no specific finding, or any finding, as to what is a proper requirement of transportation of the water nor as to what constitutes an economical use of the water;

(e) The plan or scheme of apportionment recommended by the Master is unworkable because:

1. No standard is established from which the proportionate shares of the two states may be determined;
2. The apportionment to Kansas is divided into summer and winter flows. No such division is made for Colorado. Consequently, no proportionate division, except as to annual flows, can possibly be made under the Recommended Decree.
3. Until the end of each annual period (or summer season and winter season) it cannot be

known with any certainty whether one state or the other has exceeded its apportionment. Since the water supply is produced by nature and not by the efforts of man, it is impossible to forecast the amount of the supply for any year or for any season or for any month or for any day. There is no existing engineering or scientific knowledge which will enable any administrator of the stream to keep the amounts awarded to each state in balance;

4. The Master finds the flow erratic, intermittent, varying from year to year, season to season, and day to day. Such conditions require that in any scheme or plan of apportionment between the two states of Kansas and Colorado, there must be provision for an allowance of debits and credits for under or over deliveries in order that such plan be workable;

5. The only fair, equitable and workable apportionment between these states of the flow of the interstate stream is to require Colorado to deliver at the State line an amount of water properly related to water production and fairly adjusted to compensate for the variability of flow and losses in transit and then to permit Colorado to use the supply not required to make such deliveries to Kansas.

(f) There is patent uncertainty as to meaning and effect in paragraph "Two" of the Recommended Decree (page 20) of the phrase "at such times and in such amounts as and when required by water officials of the State of Kansas".

1. Deliveries or flows to Kansas must necessarily be affected by and taken upon the conditions of the flow as produced by nature;

2. If the phrase above quoted could be construed to apply to water to be delivered during the

summer season (April-September), then this paragraph "Two" of the Decree conflicts with paragraph "Nine" of the Findings of Fact (page 11) and paragraph "Two" (page 14) of the Conclusions of Law, where it is clearly stated that the above quoted phrase applies only to water for the winter season (October to April) and further conflicts with the provision of paragraph "Nine" of Findings of Fact which, in referring to the winter flow, says, "as the same could be delivered for irrigation or storage";

3. The application of the quoted phrase to either the winter or summer water, or to both, conflicts and is inconsistent with the findings as to the character of the flow of the river being "variable from year to year and season to season and day to day and the main river at any one point may be almost without water one day and have a flood in it the next day and the following day have practically its original condition" (paragraph "Second" of Findings of Fact, page 5 of the Report);

4. To require such a variable flow to be delivered at the times and in the amounts demanded by Kansas officials is to require Colorado to do the impossible.

VII.

Complainant excepts to the Findings and Conclusions and Recommended Decree relating to "flood waters" (Paragraph "Ten", page 11, Findings of Fact; Paragraph "Four", page 15, Conclusions of Law; Paragraph "Three", page 20, Recommended Decree) because the nature of flood waters and their place of occurrence is such that any attempt to measure, control or apportion them must fail unless there are constructed numerous flood con-

trol reservoirs of a permanent nature where such waters may be conserved and not merely temporarily retarded.

VIII.

Complainant further excepts to the plan and details of the attempted apportionment because:

(a) The legal theory of such apportionment is wrong. Since Colorado is the upper state, water can obviously be delivered to it only by nature. The production and use and delivery of water occurs throughout the entire basin of the river in Colorado and in almost innumerable channels or streams;

(b) The Master in paragraphs "One" and "Two" of the recommended Decree (Pages 19, 20 of the Report) says, with reference to the respective states—"is awarded, granted and decreed to be the owner and entitled to the use of water". The concept of ownership of water by a state is wrong as water flowing in a natural stream is not subject to true proprietary ownership. The correct rule is that waters of non-navigable streams are *publici juris*, subject to the plenary control of the respective states through which the stream flows.

IX.

Complainant excepts to paragraph "Nine" of the Conclusions of Law (page 17) and to paragraph "Eight" of the Recommended Decree (page 22) to the effect that the states, their officials and representatives are "hereby severally perpetually enjoined from diverting, taking and using any water from the Arkansas River and its tributaries in excess of the amounts herein awarded to them." As applied to complainant, the State of Colorado, particularly, the use of the term "diverted", in the view of one cognizant of irrigation practices, means the measure of the water at the headgate. If such meaning is given to the paragraph above quoted, it is inconsistent with

paragraphs "One" and "Two" of the Recommended Decree which grant specific amounts of water to the respective states. The measuring of a State supply at the headgates is unsound so far as an upper state is concerned for the reason that such procedure eliminates from consideration the return flows which admittedly exist and are recognized by the Master in his Finding of Fact "Third" (Page 7, of the Report). The only true measure of stream depletion by an upper state or water user is consumptive use—that is, diversions less returns to the river—and such measure, generally accepted throughout the West, should be recognized in any apportionment as between the states and in any decree providing for such apportionment.

X.

Complainant excepts to the provisions of the Findings of Fact, Conclusions of Law and Recommended Decree for establishment and maintenance of stream gauging stations (Findings paragraph "Twelve", page 12; Conclusions paragraph "Five", page 16; Decree paragraph "Four", page 21), for the reasons that:

(a) There have been established and maintained by complainant, State of Colorado, stream gauging stations at Canon City since 1888, at a point near the mouth of the Purgatoire since 1906, and at the State line since 1908. The establishment and maintenance of additional or duplicate stations is unnecessary;

(b) No provision is made for the adjustment of the recorded flow at the Canon City station for by-passed and imported water. (By-passed water is water which would have flowed by and been measured at the station except for the fact that it was diverted above and conveyed around the station; imported water is water which has been brought into the Arkansas River basin from the basin of another river—in this case, the Colorado River.) Such imported water results from the construction in Colorado of large and ex-

pensive transmountain diversion systems by private enterprises at their own cost. To require a portion of this imported water to be delivered to Kansas is to deprive the private enterprises owning the right to use such water of their property without due process of law, in violation of Articles V and XIV of the Amendments to the Constitution of the United States. None of the owners of such imported water are parties to this case;

(c) No provision is made for measurement at the Colorado-Kansas State line except of water flowing in the river channel itself. The undisputed evidence shows that water belonging to the Arkansas River basin in Colorado crosses the State line into Kansas in other channels than that of the main river itself, as for instance the so-called "Holly Drain", and Colorado should receive credit for delivery to Kansas of water crossing the State line in these channels as well as in the main river channel itself.

XI.

Complainant excepts to Conclusion of Law, "Six" (page 16) and paragraph "Five" (page 21) of the Recommended Decree reading: "The states of Colorado and Kansas are not denied the right to assert their claim in the present suit of an equitable proportion of the waters flowing in the Arkansas River and its tributaries" and "The states of Colorado and Kansas are granted the right in the present suit to assert their respective rights and claims of an equitable apportionment of the waters in the Arkansas River and its tributaries", for the reason that these provisions are meaningless in view of the fact that the Master has attempted to make an equitable apportionment of the waters of the Arkansas River between the states and the quoted sentences may be construed to mean that the respective states are granted the right to reopen the present suit for assertion of further rights and claims. Said provisions are likewise inconsistent and in conflict

with the decision of this Court in the case of *Kansas v. Colorado*, 206 U. S. page 46, by which the State of Kansas was relegated as to assertion of any such claims to a new proceeding "whenever it shall appear that through a material increase in the depletion of the waters of the Arkansas River by Colorado the substantial interests of Kansas are being injured to the extent of destroying the equitable apportionment of benefits between the two states".

XII.

Complainant excepts to the Findings of Fact, Conclusions of Law, and Recommended Decree with reference to the so-called Caddoa Reservoir (Findings, paragraph "Thirteen", page 13; Conclusions, paragraph "Seven", page 16; and Decree, paragraph "Six", page 21), because;

> Although, as found by the Master, the construction of Caddoa Reservoir by the United States government may not be "binding" on either of the states of Colorado or Kansas, nevertheless the reservoir is in existence. It is located on the main channel of the Arkansas River about 50 miles west of and above the Colorado-Kansas State line. The impounding therein and release therefrom of water is under the control of the Corps of Engineers of the United States Army. Obviously such impounding and release of water will have a direct effect upon the flow of the water crossing the State line. The State of Colorado has no control over the actions of the Corps of Engineers. The United States is not a party to this case and cannot be made a party by either state.

XIII.

Complainant excepts to the Findings of Fact, Conclusions of Law and Recommended Decree of the Master with reference to the 1933 Stipulation between the officials and counsel for the Complainant and Defendants (Findings, Paragraph Thirteen, page 13; Conclusions, Paragraph

"Seven", page 16; and Decree, Paragraph "Six", page 21) because:

"(a) Such stipulation was not, as found by the Master, entered into after the construction of Caddoa Reservoir, but on the contrary was entered into long before the construction of said reservoir— on December 18, 1933. Construction of Caddoa Reservoir was not authorized until 1938 and construction was not actually commenced until 1939.

(b) The stipulation does not affect merely the water impounded in said reservoir as stated by the Master but refers to and affects the flow of the Arkansas River;

(c) The stipulation became effective when Caddoa dam and reservoir were constructed and water was impounded therein; not when it was completed;

(d) While it is true in fact that such stipulation was not ratified by the legislatures of the two states and was not consented to by the Congress of the United States and, hence, was not binding as an interstate compact, nevertheless that stipulation was signed by the governors of the respective states, their water officials and the respective counsel in this case, and by its terms defines the amount of water required to satisfy the then existing Kansas irrigation requirements in the views of those who signed the stipulation. The apportionment to Kansas of a greater amount of water than that stated in the stipulation, as is now recommended by the Master, constitutes an apportionment of water for future development and use, which may or may not take place. Since the stream is now over-appropriated, this apportionment to Kansas of more water than required to satisfy existing Kansas irrigation development must necessarily mean that some Colorado land now irrigated, and irrigated in 1907, will in the future be deprived of water in order to meet the Kansas requirement.

Such a result is directly contrary to the principle that existing economic development will be protected whenever possible.

XIV.

Complainant excepts to the failure of the Master to make any complete or accurate findings as to:

(a) The physical features of the Arkansas River basin in Colorado and Kansas;

(b) The location, extent, character, history and development of the irrigated areas in the two states;

(c) The nature and availability of the water supply;

(d) The natural conveyance losses of water in the Arkansas River and its tributaries;

(e) The effect of Caddoa Reservoir on the regimen of the stream flow;

(f) The status established by the decision in *Kansas v. Colorado*, 206 U. S. 46, and the determination and adjudication therein that up to that time (1907) Colorado had not exceeded its share of equitable benefits;

(g) The water supply of the Arkansas River basin in Kansas;

(h) The imperative need of irrigation for the production of crops on land now under cultivation in Colorado;

(i) The expensive facilities constructed by Colorado water users to develop storage and to conserve water for beneficial use and the failure of Kansas in that respect;

(j) The availability, feasibility and actual development of water for irrigation by pumping enterprises in Kansas.

XV.

Complainant excepts to the failure of the Master to make any finding as to, or to give any consideration to or, in fact, to mention, the 1916 settlement between certain Colorado water users and the Garden City group of Kansas ditches (the Kansas irrigation ditches may be divided into the Garden City group and the State line group, of which the Garden City group is much the larger and more important) or the rotation agreement and decree between the Garden City group of Kansas ditches (including the defendant, The Finney County Water Users' Association) because the undisputed evidence shows:

(a) In 1916 all the Kansas ditches and water users of the Garden City group, except the Farmers' Ditch of the defendant herein, The Finney County Water Users' Association, settled certain cases theretofore brought in the United States District Court for the District of Colorado by the United States Irrigation Company, which is not the predecessor in interest of the defendant The Finney County Water Users' Association as found by the Master in Finding of Facts "Fourth", to assert certain priorities in its behalf as against a large number of Colorado water users. Under this agreement the Colorado ditches and water users paid to the Kansas ditches approximately $150,000 and the Kansas ditches in turn agreed not to assert any claim or demands to priorities as of a date earlier than August 27, 1910;

(b) By agreement and decree the Garden City group of ditches, including the Farmers Ditch of the defendant The Finney County Water Users' Association, rotate the water supply from the Arkansas River. To protect existing economic development, recognition should be given to the Kansas rotation agreement and to the priority date agreed to by the Kansas ditches in and by the 1916 settlement.

XVI.

Complainant excepts to the report of the Master as a whole and to the Findings of Fact, Conclusions of Law and Recommended Decree as a whole, because:

(a) It reflects a misconception of the problems inherent in the practical administration of the waters of the Arkansas River and is wholly inequitable, impractical and unworkable;

(b) No recognition is given the principle of beneficial use since gross amounts of water are awarded to the respective states without consideration as to whether or not the water is, or can be or will be, applied to a beneficial use;

(c) The awarding to Kansas of a quantity of water not now needed by irrigation development in that state, but imperatively required for irrigation in Colorado, is in fact a reshuffling of economic development along the river without regard to the effect thereof upon the public welfare or upon existing development;

(d) The Master considers and treats the situation as if the only question involved were the division of a certain amount of water available at all times and easily susceptible of measurement. Actually the problem is much more complex. The public welfare requires that there be the greatest possible utilization and conservation of the water supply of the Arkansas River. To meet these requirements an apportionment of water between the two states must be equitable, flexible and feasible of administration, and must to the fullest extent possible under the present development of engineering science and irrigation practice, provide for the distribution, use and re-use of an erratic and limited water supply so that it be not wasted.

XVII.

The Findings of Fact are contrary to the evidence.

XVIII.

The Conclusions of Law are contrary to the law and the evidence.

XIX.

The Recommended Decree is in conflict with the Findings of Fact, and the Conclusions of Law, and is contrary to the evidence and to the Law.

Respectfully submitted,

GAIL L. IRELAND,
Attorney General,

SAMUEL L. FAIRLAMB,
Assistant Attorney General,

ARTHUR C. GORDON,
Special Assistant Attorney General.

A. W. MCHENDRIE,
HENRY C. VIDAL,
JEAN S. BREITENSTEIN,
CLIFFORD H. STONE,

Special Counsel.